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14. ABSTRACT U.S. dependency on space and an increased potential for conflict in space have led to a new form of warfare aimed at denying the adversary access to space. Offensive Counter Space is yet another tool the Joint Force Commander can use to subdue an enemy who possesses or simply has access to space. Three questions arise when planning for and executing these types of operations in a theater Joint Task Force: (1) What types of forces should be employed? (2) What should the command and control structure look like? (3) What global considerations should be made during mission planning? This paper first explains why space is important to the enemy in today's political and military environment. It continues by answering each of the three questions above. First, the most effective execution of Offensive Counter Space missions is through the joint force employment of aircraft, missiles, counter space technologies, and special operations. Next, unity of command is secured by placing all forces with an OCS mission under the Joint Force Air Component Commander in a Joint Task Force construct. Finally, it is stressed that global secondary space effects must be taken into account and that U.S. Strategic Command expertise can assist in these planning efforts. Conclusions and recommendations are made in regards to potential Joint Task Force organizational structures, rewriting the space operations joint publication, creating a new counter space operations joint publication addressing these and other issues, and adding a Universal Joint Task for offensive counter space operations. Only through these changes will the joint force understand how to best conduct these operations, enhance U.S. capabilities in these areas, and allow for the best chance of success when denying an enemy access to space.					
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**OFFENSIVE COUNTER SPACE OPERATIONS: CAPABILITIES, COMMAND, AND
CONSIDERATIONS**

by

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A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements for the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College, the Department of the Air Force, or the Department of the Navy.

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Abstract

Offensive Counter Space Operations: Capabilities, Command, and Considerations

U.S. dependency on space and an increased potential for conflict in space have led to a new form of warfare aimed at denying the adversary access to space. Offensive Counter Space is yet another tool the Joint Force Commander can use to subdue an enemy who possesses or simply has access to space. Three questions arise when planning for and executing these types of operations in a theater Joint Task Force: (1) What types of forces should be employed? (2) What should the command and control structure look like? (3) What global considerations should be made during mission planning? This paper first explains why space is important to the enemy in today's political and military environment. It continues by answering each of the three questions above. First, the most effective execution of Offensive Counter Space missions is through the joint force employment of aircraft, missiles, counter space technologies, and special operations. Next, unity of command is secured by placing all forces with an OCS mission under the Joint Force Air Component Commander in a Joint Task Force construct. Finally, it is stressed that global secondary space effects must be taken into account and that U.S. Strategic Command expertise can assist in these planning efforts. Conclusions and recommendations are made in regards to potential Joint Task Force organizational structures, rewriting the space operations joint publication, creating a new counter space operations joint publication addressing these and other issues, and adding a Universal Joint Task for offensive counter space operations. Only through these changes will the joint force understand how to best conduct these operations, enhance U.S. capabilities in these areas, and allow for the best chance of success when denying an enemy access to space.

Whereas those who have the capability to control the air, control the land and sea beneath it, so in the future it is likely that those who have the capability to control space will likewise control the earth's surface.

General Thomas D. White, Air Force Chief of Staff, 1957

After years of failed deliberations, China is now threatening an invasion of Taiwan to take back territory they believe is rightfully theirs. They have amassed troops and equipment to their eastern shores in anticipation of an amphibious assault. Over the past several decades, the People's Liberation Army (PLA) has significantly built-up their military might in all areas. The world has witnessed their impressive leap in capabilities to include ground, naval, air, and space forces. In regards to space assets, the Chinese have credible satellite command and control operations that give them intelligence, surveillance, and reconnaissance (ISR), communication, and early warning abilities. Their ground stations are dispersed and well-protected and they possess space launch platforms to quickly and accurately place spacecraft in orbit. On the offensive side, their January 2007 anti-satellite (ASAT) weapons test was just a hint of what capabilities they now possess.

In response, U.S. Pacific Command (USPACOM) establishes a Joint Task Force (JTF) and appoints the Commander of 7th Fleet as its Joint Force Commander (JFC). The Chinese have broken off all ties to the United States due to our pledge to defend Taiwan in the event of an attack by China. Internal Chinese intelligence is sketchy at best and their intentions are unknown at this time. As the JTF forms, planners work through plausible courses of action in response to numerous actions that could take place all the while preparing for the worst. The worst just happened . . . a U.S. Defense Meteorological Satellite Program (DMSP) satellite is attacked by a Chinese laser as part of their ASAT program. The satellite, although still intact, is rendered useless due to the high dose of energy directed at it.

Figure 1.
Defense Meteorological Satellite Program
(DMSP) Satellite



This attack causes an immediate degrade in our ability to forecast weather patterns essential to conducting air, maritime, and land operations. Realizing that U.S. forces have just lost space superiority, the JTF Commander (CJTF) now looks to his component commanders on how to proceed. He wants to direct immediate strikes against China's space assets to include jamming of their communication downlinks, destruction of their ASAT weapons, and temporarily degrading their launch capabilities. In order for all of these to be accomplished, he needs to know what capabilities are available to him and which ones he still needs to request, who controls the forces that would perform these missions, and what global considerations must he take into account before committing to these missions.¹

How can the CJTF best employ forces to combat this space threat? What forces should he use? What other considerations does he have when apportioning such forces? Does he have a single point of contact for the employment of these offensive space operations? Such operations, known as Offensive Counter Space (OCS) operations, are one option to use against enemy space assets. What is unresolved, and the purpose of this paper, is how the CJTF (or the JFC as he will be referred to in this paper) can best employ these capabilities so that they are operationally

¹ This scenario is fictional and intended to provide only a context in which to illustrate the importance of offensive and defensive space capabilities in current and future military operations. This scenario does not necessarily represent the views of the U.S. Department of Defense or the Naval War College.

responsive to the needs of the mission. In other words, how can OCS missions best meet the objectives of the JTF. The thesis of this paper is that Offensive Counter Space missions are best executed when: (1) a combination of joint forces are employed, (2) forces are organized under a single commander, and (3) potential global secondary effects are considered during the planning process.

Importance of Space to the Enemy

The preceding scenario, although fictitious, is an example of how a regional superpower can threaten the military balance of power during a conflict through the use and control of space. It pits one conventional power against another. This is a likely scenario considering the recent build-up of Chinese military forces to include their military space capabilities. It is also safe to say that the enemy doesn't have to be China. Numerous nations and organizations have access to space and the advanced capabilities this access brings to bear as figure 2 demonstrates.

Such foes as Iran and North Korea currently have or will soon have the ability to command satellites, launch space vehicles into orbit, and use space as a medium for communications, navigation, and intelligence collection. Each of these capabilities could prove problematic to the United States should we enter into conflict with any of them. Even the most rudimentary access to space assets, even if they aren't owned or operated exclusively, can significantly enhance a nation's military capabilities.

What's Up There

As of Dec. 31, 2004

Country Organization	Payloads In Orbit		Debris	Total
	Satellite	Space Probes		
US	927	55	2,381	3,363
Russia*	1,358	35	1,780	3,173
People's Republic of China	51	0	277	328
France	43	0	202	245
India	31	0	103	134
Japan	89	7	25	121
European Space Agency	38	8	27	60
Intl. Telecom Sat. Org.	62	0	0	62
Globalstar	52	0	0	52
Orbcomm	35	0	0	35
European Telecom Sat. Org.	27	0	0	27
Canada	23	0	1	24
Germany	21	2	1	24
United Kingdom	23	0	1	24
Italy	11	0	2	13
Luxembourg	13	0	0	13
Australia	9	0	2	11
Intl. Maritime Sat. Org.	11	0	0	11
Brazil	10	0	0	10
Sweden	10	0	0	10
Argentina	9	0	0	9
Indonesia	9	0	0	9
NATO	8	0	0	8
South Korea	8	0	0	8
Spain	8	0	0	8
Arab Sat. Comm. Org.	7	0	0	7
Mexico	6	0	0	6
Saudi Arabia	6	0	0	6
Czech Republic	5	0	0	5
Israel	5	0	0	5
Netherlands	5	0	0	5
Thailand	5	0	0	5
Turkey	5	0	0	5
Other**	41	3	0	44
Total	2,969	108	4,802	7,879

* Russia includes Commonwealth of Independent States (CIS) and former Soviet Union.

** Other refers to countries or organizations that have placed fewer than five objects in space.

Figure 2.
Worldwide Payloads in Orbit²

The opponent also does not have to be a superpower who can afford the technology of complex space systems. Even an adversary with no indigenous space assets may use space through U.S., allied, commercial, or consortium space services. These services could potentially include precision navigation, high-resolution imagery, environmental monitoring, and satellite communications. A nation (or even an organization, such as al Qaeda) does not even require the technical expertise to have access to space. All they would need is the political means to use another nation's in-place space assets or the financial means to pay for commercial space access.

²Air Force Association. "Space Almanac," *Air Force Magazine*. 89 (August 2004), 76.

The price to rent space capabilities is exponentially less than the price tag for individual research and development, launch facilities, and command and control centers. Our enemies are doing just that today. For example, during Operation IRAQI FREEDOM, the Iraqi government used a leased transponder on a Middle Eastern consortium-owned communications satellite, to broadcast propaganda on news networks.³

There is no question that the control and exploitation of space is critically important to the United States both from an economic standpoint as well as militarily. The Ptolemaic nature of space demonstrates that so much depends on maintaining access to it; without it we wouldn't be able to function in the same ways we do today. Militarily, this was demonstrated in 1991 during Operation DESERT STORM, dubbed the first 'space war'. Successes there also served as a wake-up call for the U.S. and the entire world on how one nation can overwhelm another through the control and exploitation of space. Former Undersecretary of the Air Force, Peter B. Teets, reinforced this belief in 2004 by stating, "Our adversaries have taken note of the asymmetric advantage that we have in space today . . . Our adversaries are certainly thinking about how they could exploit whatever vulnerability we might have."⁴

What one may not realize is how important access to and the use of space systems are to the enemy. Not only can a nation communicate more effectively and over greater distances, it can keep better tabs on what the other side is doing and where they are doing it. It is for exactly the same reasons that the United States and its allies consider the control and exploitation of space vital to the conduct of warfare today. The enemy also strives to deny the United States the use of space. For example, during the second Gulf War, Iraqi troops tried to jam Global

³U.S. Air Force, Space Operations, Air Force Doctrine Document (AFDD) 2-2 (Washington, DC: Department of the Air Force, 27 November 2006), 23.

⁴ Tirpak, John A. "Securing the Space Arena." *Air Force Magazine* 87, no. 7 (July 2004), 31.

Positioning System satellite signals. Although they were unsuccessful in their attempts, it was a taste of things to come.⁵

The United States does a fairly good job of protecting its capabilities in space through physical protection of ground stations, encryption/decryption methods, and “hardening” satellites against enemy radiation. This is what is referred to as Defensive Counter Space or DCS. What we don’t think about all the time is the OCS piece of directly or indirectly attacking the enemy’s ability to conduct operations in, from, to, and through space.

What is Offensive Counter Space (OCS)?

OCS is defined as “operations that preclude an adversary from exploiting space to their advantage . . . it may target an adversary’s space capability (space systems, terrestrial systems, links, or third party space capability), using a variety of permanent and/or reversible means.”⁶ These means can encompass all instruments of national power.⁷ In the military form, it is the ability to directly or indirectly strike targets that support an adversary’s space capability. In the joint arena, it is defined under U.S. Strategic Command’s (USSTRATCOM) Space Control Mission. Phrases such as “negation of adversary space systems” and “deny freedom of action in space to enemy forces” are joint doctrinal references to OCS capabilities found in Joint Publication (JP) 3-14, *Joint Doctrine for Space Operations* and shown in figure 3.⁸

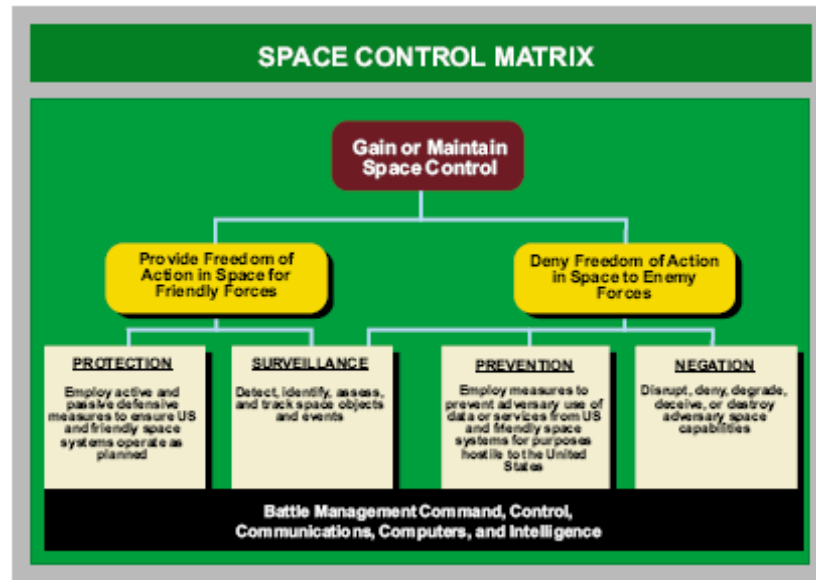
⁵ Ibid., 31.

⁶U.S. Air Force, Counter Space Operations, Air Force Doctrine Document (AFDD) 2-2.1 (Washington, DC: Department of the Air Force, 2 August 2004), 3.

⁷ AFDD 2-2, *Space Operations*, 23.

⁸ Chairman, U.S. Joint Chiefs of Staff, Joint Doctrine for Space Operations, Joint Publication (JP) 3-14 (Washington DC: CJCS, 9 August 2002), IV-7.

Figure 3.
Space Control Matrix and
Counter Space Operations⁹



Further, JP 3-14 refers to negation as “measures to deceive, disrupt, deny, degrade, or destroy an adversary’s space capabilities...including actions on the ground, link, or space segments of an adversary’s space system.”¹⁰ Figure 4 illustrates these five measures, known as the 5 D’s, as the cornerstone to joint OCS operations.

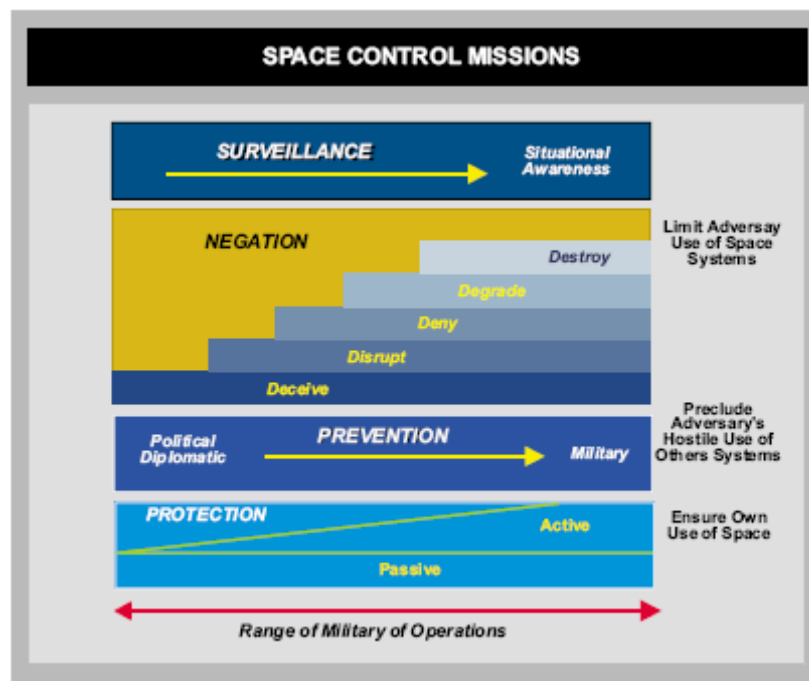


Figure 4.
Space Control Missions and
Counter Space Operations,
The 5 D’s¹¹

⁹ Ibid., IV-7.

¹⁰ Ibid., IV-6.

¹¹ Ibid., IV-6.

OCS can take the form of a direct attack against a satellite ground station to cause permanent or long-term effects. Or, it could be a strike against the infrastructure that supports it, such as electrical grids, communication nodes, or manpower access. Attacking these supporting elements would temporarily disable a ground-based space asset, if that were the intention of the JFC. Further, OCS can take the form of non-kinetic strikes or interference with communication streams to and from space. The act of jamming a signal to or from space can render a satellite or other space object useless. The simple act of directing a satellite antenna off its intended satellite renders that support system useless. All of these methods, and others being developed for future conflicts, are considered OCS options. Knowing this, it is now important to examine three ways a JFC can best plan and execute OCS missions.

Joint Force Employment

First and foremost, the JFC must be made aware of what OCS capabilities are available to him. OCS missions can be accomplished by any of the Services, depending on the desired effect and unit expertise. The desired results of OCS missions exist along a spectrum or range of operations from temporary disruption of the enemy's access to space to the complete and permanent destruction of space-related facilities. Figure 5 depicts this range of operations in relation to both JP 3-14's five negation measures and potential employment options.

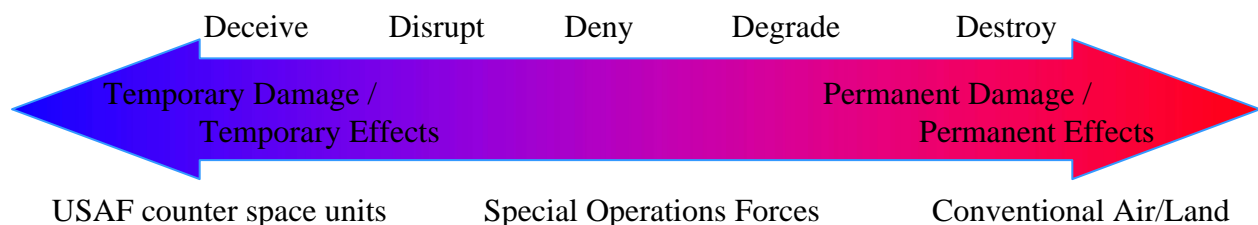


Figure 5.
Offensive Counter Space Spectrum of Operations

What is also important here is that OCS is still a relatively unknown concept outside of Air Force Space Command (AFSPC) and thus is seen by different Services as different things. Lacking a joint definition of how each Service is to contribute, everyone has a unique understanding of how it should be employed. The following is an examination of several OCS capabilities throughout various Services. This is not an all-inclusive list since it is not the intent of this paper to list all units with OCS capabilities as well as the fact that some units have classified missions that cannot be discussed further in the context of this paper.

The 4th and 76th Space Control Squadrons (SPCS) under AFSPC operate and maintain the Counter Communications System (CCS), a near-term ground-based, mobile system to disrupt enemy satellite communications.¹² The squadrons deploy globally to conduct mobile and transportable space superiority operations based on taskings from USSTRATCOM in support of Geographic Combatant Commanders (GCCs).¹³ These are relatively new units having only demonstrated Initial Operational Capabilities in 2004 and 2006. They have the ability to disrupt signals to and from space, beyond this, their specific missions and capabilities are classified. In addition, the 8th Information Warfare Flight (IWF) performs Information Operations (IO) against an enemy by controlling and manipulating their space capabilities through influence operations to include deception, psychological warfare, and counterpropaganda.¹⁴ Again, much of what they do or coordinate is classified.

The Air Force is also developing several advanced OCS systems to meet current and emerging adversarial space threats. The Counter Surveillance and Reconnaissance System

¹² Tirpak, 33.

¹³ U.S. Air Force, 4th Space Control Squadron Fact Sheet and 76th Space Control Squadron Fact Sheet. <http://www.peterson.af.mil/library/factsheets/factsheet.asp?id=4707> and <http://www.peterson.af.mil/library/factsheets/factsheet.asp?id=4808> (accessed 15 February 2007).

¹⁴ Benrose, Stephanie, "Warfare flight works behind the scenes," *Air Force Print News*, 25 April 2006, <http://www.af.mil/news/> (accessed 25 April 2007).

(CSRS), similar to CCS, will disrupt and degrade enemy space-based surveillance and reconnaissance systems. Also, the Counter Navigation System (CNS) will deny an adversary the use of satellite navigation signals. These two systems are slated for fielding in 2009 and 2017, respectively.¹⁵ These counter systems are designed to temporarily disrupt an enemy's access to space. OCS capabilities to permanently deny enemy space exploitations will now be discussed.

Specially-trained infiltration units, such as Navy SEALs or Army Special Forces (SF) of U.S. Special Operations Command (USSOCOM), are best suited for quick, quiet, and surgical direct attack (DA) strikes against adversary space support facilities or the critical infrastructure that accompany them. SEALs are most effective in the littorals while SF troops can be inserted deeper in an enemy's territory. It all depends on where the target is located and what effect is desired.

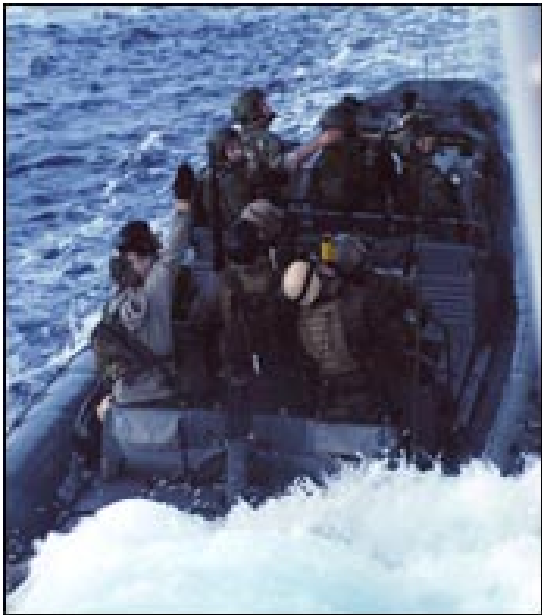


Figure 6.
U.S. Navy SEALs speed past the
port side of the guided missile
cruiser USS Shiloh (CG 67)¹⁶

¹⁵ Tirpak, 33-34.

¹⁶ Department of the Navy photo, www.specialoperations.com (accessed 30 Mar 07).

Aviation assets from any of the Services, to include long range bombers using Precision Guided Munitions (PGMs), can strike these same facilities if a more permanent effect is planned. Properly equipped fighter aircraft from Navy aircraft carriers, or Air Force fighters or bombers can each deliver these weapons to completely destroy an enemy's space ground support facilities.

Next, based on the JTF objectives, targets identified, and desired level of effect (disruption through complete annihilation), forces from the entire joint package should be considered. Air Force counter space units should be used to create denial or temporary disruption. For example, if a ground-based space Command and Control (C2) node is the desired target, then disruption efforts could jam signals directed from the C2 center to space and back. The temporary effect on these links allows for reception to be reinstated later in the operation. The JFC may plan to launch an IO campaign later in the conflict and use these same links to broadcast U.S. propaganda messages to the enemy.

Conventional air or land strikes are appropriate if the desired effect is permanent damage so that a specific space capability is no longer available to the enemy or so that reconstruction is not possible until after the conflict. PGMs can destroy the same C2 node so it is inaccessible in the long term.

Special Operations Forces (SOF) units, specially trained to perform a wide variety of functions, can perform OCS operations along the entire effects continuum. In this case, SOF can temporarily disconnect power or communication grids from the C2 node thus rendering it useless. But, these same units can set explosives to cause permanent damage to the facilities, key infrastructure, or power/communication grids.

It is clear that a wide range of OCS options exist for the JFC. These options range from counter communication units to conventional air or land precision strikes to clandestine SOF units . . . truly a joint endeavor. It is important for the JFC and JTF planners to consider options from across this range to produce the desired effects; whether to permanently or temporarily disable an adversary's access to space, or a combination of both. The JFC should be able to exercise the ability to degrade a part of the enemy's capabilities while leaving others intact.

Command and Control (C2) Issues

Next is the command and control structure needed to effectively employ these joint forces. What should it look like? Who should be in charge? What is most important is that the JFC have the flexibility to organize his forces the best way he sees fit to execute the JTF mission. Knowing this, there are several considerations that should be made when deciding how to organize forces. Of the utmost importance is the JFC's desire for unity of effort (all forces committed to the same mission regardless of whom they report to) and unity of command (all OCS forces under a single commander). Both are important but almost impossible to simultaneously attain considering the complex command authority structure of air, space, land, naval, and SOF units as well as the know-how to best employ them.

So, who has control over OCS forces within a JTF? The answer is, no one single entity. Joint doctrine does not address this issue. As discussed previously, this is partially because the JFC should be given flexibility to organize his forces anyway he sees fit, based on the situation and the mission. However, it is important to think through these issues and develop various options for the JFC. By evaluating these issues prior to encountering them during a real-world event, we can provide the JFC with options to choose from dependent on his needs.

Current Joint and Air Force doctrine outline the Department of Defense's (DOD's) command and control structure for space. The Commander of U.S. Strategic Command (CDRUSSTRATCOM) has overall Combatant Command (COCOM)¹⁷ of DOD space resources and operations. CDRUSSTRATCOM delegates operational control (OPCON)¹⁸ of all assigned and attached Air Force space forces to the Commander, Air Force Space Command (AFSPC/CC), who plans and executes daily operations through the Commander, 14th Air Force (14 AF/CC).¹⁹

During a contingency, USSTRATCOM and its Joint Functional Component Commander for Space and Global Strike (JFCC-SGS) transfers OPCON of space forces to another combatant commander or theater JFC. To ensure unity of command, the JFC in turn generally delegates this OPCON authority to the appropriate Service component commander, usually the Commander of Air Forces (COMAFFOR) who is also usually “dual-hatted” as the Joint Force Air Component Commander (JFACC).²⁰ Figure 7 depicts this relationship.

¹⁷ COCOM refers to nontransferable command authority exercised only by unified or specified combatant commanders unless otherwise directed by the President or the Secretary of Defense. COCOM cannot be delegated and is the authority to perform those functions of command over assigned forces involving: organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction over all aspects of military operations, joint training, and logistics necessary to accomplish assigned missions. COCOM provides full authority to organize and employ commands and forces as necessary to accomplish assigned missions. (from DOD Dictionary of Military and Associated Terms, JP1-02)

¹⁸ OPCON is command authority that may be exercised by commanders at any echelon at or below the level of combatant command that involves: organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. OPCON is inherent in COCOM and may be delegated within the command. (from DOD Dictionary of Military and Associated Terms, JP1-02)

¹⁹ AFDD 2-2.1, *Counter Space Operations*, 9.

²⁰ Ibid., 9.

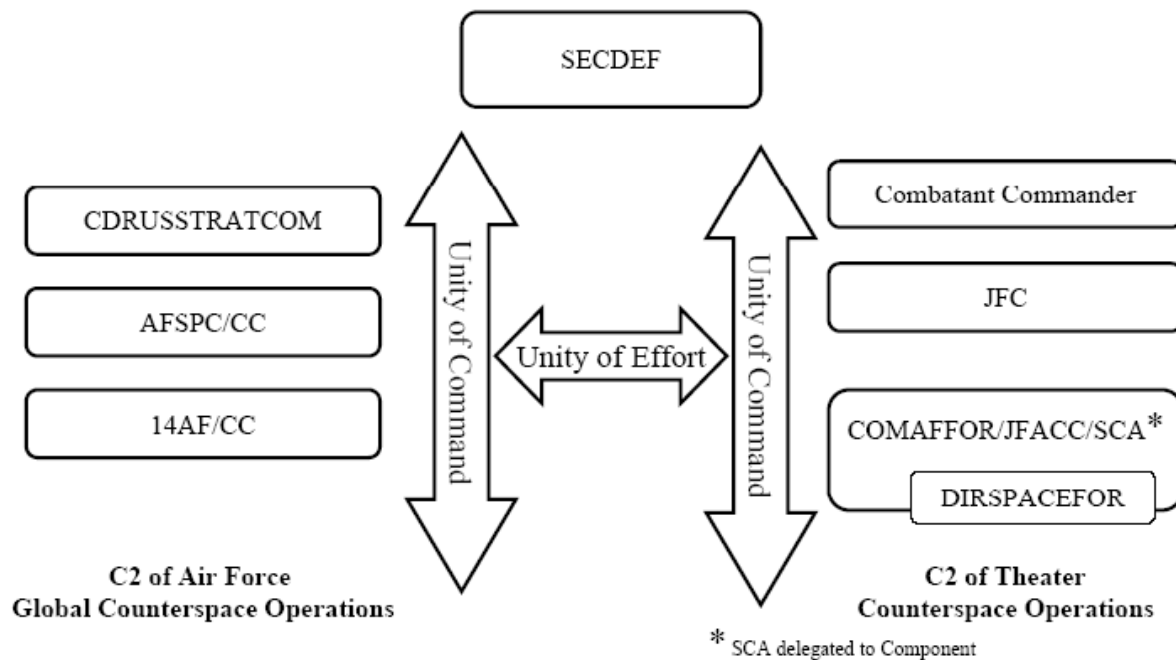


Figure 7.
Notional Overview of Space Roles and Responsibilities²¹

This is fine for Air Force OCS units already under OPCON of the JFACC, but SOF units potentially employed in an OCS role still report to the Joint Force Special Operations Component Commander (JFSOCC), leaving disunity of command. This is not the ideal situation when it comes to planning and executing OCS missions. Unequivocal unity of command exists only when forces are attached to a single component commander. The JFC has several options to ensure close coordination of all OCS forces during both planning and execution phases.

One option would be to transfer tactical control (TACON)²² of all assigned/attached OCS forces to the JFACC during OCS operations. This would mean that in addition to the aviation assets already under the JFACC, USSTRATCOM space units and JTF SOF units with OCS

²¹ Ibid., 10.

²² TACON refers to the command authority over assigned and attached forces or commands that is limited to the detailed and usually local direction and control of movements and maneuvers necessary to accomplish missions or tasks. (from DOD Dictionary of Military and Associated Terms, JP1-02)

taskings would also come under the tactical control of the JFACC. This unity of command would ensure that all forces with an OCS mission would report to a single commander.

Under this command structure, the JFACC, being the senior air and space commander, would direct OCS missions. He performs his space duties with guidance from the Director of Space Forces (DIRSPACEFOR), a credentialed Air Force space officer assigned by the COMAFFOR to plan, execute, and assess space operations. In essence, this person is the senior Air Force space advisor who facilitates coordination, integration, and staffing activities.²³ To facilitate unity of effort within theater space operations, joint doctrine currently recommends that the JFC retain or appoint Space Controlling Authority (SCA) to coordinate joint theater space operations and integrate space capabilities.²⁴ Air Force doctrine states that this authority should be given to a component commander and further recommends that the JFACC be designated SCA. This precedent was set during Operation IRAQI FREEDOM when the Combined Force Air Component Commander (CFACC) was given SCA.²⁵

An advantage to this command structure would be that all OCS planning would occur under the JFACC ensuring a unity of effort between all forces assigned OCS missions. Simultaneity and depth would result allowing concurrent attacks from multiple dimensions to occur. The enemy would be overwhelmed from actions taking place to disrupt his access to space accomplished through numerous mediums.

However, several drawbacks to this arrangement need to be addressed. First, the SOF community may have difficulty with their units under non-SOF command. The JFACC doesn't necessarily understand the capabilities and employment of non-air OCS forces. This could be solved by establishing a Joint Special Operations Task Force (JSOTF) under the tactical control

²³ JP 3-14, *Joint Doctrine for Space Operations*, 16.

²⁴ AFDD 2-2.1, *Counter Space Operations*, 9.

²⁵ *Ibid.*, 12-13.

of the JFACC to plan and employ SOF counter space missions but under a SOF task force commander. The JSOTF would still maintain reach back to the JFSOCC for administrative and training purposes.

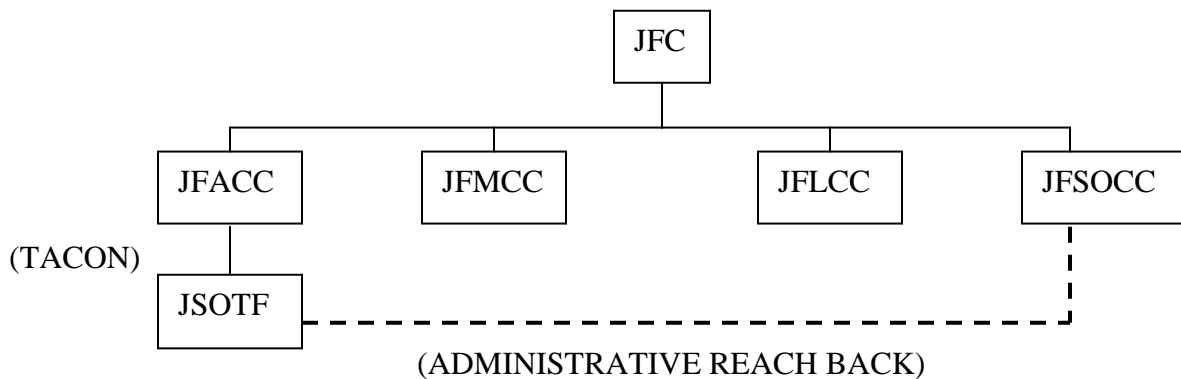


Figure 8.
Command and Control Structure: JSOTF under the JFACC

Next would be the inability of SOF units with OCS taskings to quickly transfer back to JFSOCC to perform other missions. If another mission surfaces that requires a SOF unit under the tactical control of the JFACC to return to JFSOCC, there may arise some disagreements of *if* and *when* the unit returns. Early and close coordination between the JFACC, JFSOCC, and their planning groups can alleviate this situation. If OCS is truly a space mission, then the command structure proposed here works, as all air, space *and* SOF OCS forces would fall under the single command of the JFACC.

Global Space Effects

Finally, it is imperative that JFCs and operational planners make global considerations when planning for and executing OCS missions. Space is a unique environment beset with operational challenges resulting from various principles that govern the medium.²⁶ Space, bound by a vastly different environment than that of the sea, land, or air, imposes a different set of rules. Most applicable for this discussion is the effects that weapons have in space. Theoretically, ground-to-space weapons designed to impede or destroy other systems require a JFC and operational planners to weigh the intended effect across the entire orbital environment. Without atmospheric or terrain constraints, weapon ranges are relatively unlimited, and after-effects could remain within the earth's orbit for a significant period of time, potentially threatening both friendly and neutral space systems.²⁷

The Butterfly Effect²⁸ is a good illustration when dealing with operations in space. An event over one region can potentially have an effect (positive or negative) on the other side of the globe or even along a completely different orbit. The effect can be intended or unintended. Take the January 2006 Chinese ASAT test for example. The destructive laser originated from mainland China, shot a Chinese weather satellite in low polar orbit (approximately 6400 miles above the earth's surface), and resulted in more than 1600 additional pieces of orbiting debris. This new debris field enlarged the number of potential hazards in space by 15% and increased the risk of collision with the roughly 700 active spacecraft in similar orbits.²⁹ Satellite command

²⁶ Lupton, David E., *On Space Warfare: A Power Doctrine* (Maxwell AFB, AL: Air University Press 1988), 17.

²⁷ *Ibid.*, 22.

²⁸ The phrase refers to the idea that a butterfly's wings might create tiny changes in the atmosphere that ultimately cause a tornado to appear (or prevent a tornado from appearing). The flapping wing represents a small change in the initial condition of the system, which causes a chain of events leading to large-scale phenomena. Had the butterfly not flapped its wings, the trajectory of the system might have been vastly different. (from <http://mathworld.wolfram.com/ButterflyEffect.html>, accessed 16 April 2007).

²⁹ Wolf, Jim. "China poses risk to key U.S. satellites: top general." *USAF Aim Points*, April 12, 2007. <http://aimpoints.hq.af.mil> (accessed April 12, 2007).

and control and launch operations are now more difficult. This in itself argues for close coordination for world-wide situational awareness that is beyond the theater command capabilities.

Integration of theater space requirements must consider both global and theater perspectives. Global integration is the responsibility of CDRUSSTRATCOM while theater integration is the responsibility of the GCC and the JFACC,³⁰ although they are not equipped to do this in theater alone. If JTF planners decide that destroying an adversary's satellite is the best option, they must ensure proper coordination with USSTRATCOM. Specifically, the USSTRATCOM JFCC-SGS should be in the loop, if not physically in the planning group, from the start to act as the global sanity check before mission orders are issued. Their expertise in global space awareness would limit potential unintended second and third order space effects not normally considered by a joint planning group.

Also, denying or disrupting an enemy's space access could have potential negative effects on other friendly nations. One nation's access may also be linked to another (neutral) nation's access. Theater planners prepare alternative courses of action for the possible loss of friendly space capabilities *if* strikes on adversary space capabilities become neither appropriate nor feasible.³¹ Planners, along with interagency partners, need to weigh the risk of allowing an adversary's space capability to exist in order to maintain supportive diplomatic relations with another nation. Also, strikes may not be appropriate or feasible if the intelligence value of the adversary space capability is deemed more important.³² Knowing what the enemy can see and taking actions to deceive them can pay big dividends when planning offensive operations against them.

³⁰ AFDD 2-2, *Space Operations*, 21.

³¹ AFDD 2-2, *Space Operations*, 23.

³² *Ibid.*, 23.

In addition, the JFC should consider keeping the enemy's space links intact to broadcast future Psychological Operations (PSYOPS) and Civil Affairs (CA) messages. Satellite links can be an enemy's strength prior to hostilities but if used against them, can become a huge vulnerability. IO can exploit already intact communication links without the enemy's knowledge, thus turning the table in the information war.

Finally, all instruments of national power (diplomatic, information, military, and economic) should be considered before resorting to kinetic military operations. For example, to prevent an adversary from using space imagery to observe preparations for a counteroffensive in a specific area, other avenues can and should be considered before military intervention. A diplomatic solution to this scenario may be to persuade a consortia-owned satellite company to deny service to the adversary. Similarly, providing U.S. intelligence to a friendly nation in exchange for their denial of information to adversaries is an example of using the information instrument. Finally, using the economic instrument, the U.S. could buy imagery to prevent the adversary from acquiring it.³³ All of these are potential solutions to the same problem. The right option depends on the situation, the enemy's capabilities and intentions, current national strategy, and JTF objectives. Of course timing and national security concerns will also lead to the best solution. If time is not on our side and further damage to U.S. national security is imminent without immediate action, then the military option should be considered first.

³³ Ibid., 24.

Conclusions

OCS operations are relatively new and hence, the U.S. military doesn't have a wealth of experience from which to draw upon in order to best conduct operations in this domain. An obvious by-product to this conundrum is a lack of joint doctrine and understanding how to best employ these types of missions. JP 3-14 covers joint space operations but only defines *what* forces can do and never mentions OCS. This publication is also out-dated (August 2002) and refers to U.S. Space Command, an organization that no longer exists (its missions have been absorbed under USSTRATCOM and AFSPC). Air Force doctrine, on the other hand, through AFDD 2-2 and 2-2.1 is very specific on how to conduct counter space operations but is obviously very Air Force-centric. However, three things are clear when it comes to effectively planning and executing these types of operations.

First, using forces from the joint force is imperative. OCS operations occur across a spectrum of desired effects from temporarily disrupting communication links to completely denying access to and from space. The key is picking the right forces and combining them to create synergistic effects - exerting the greatest pressure on the adversary.³⁴ In addition, not all Services know what it means to conduct OCS missions. AFSPC operators are well-versed with non-kinetic OCS tactics, techniques, and procedures (TTPs). Conversely, if you ask a SOF warrior to define his role in an OCS mission, he might simply consider it another target. Mission specialization is essential, however effective OCS operations require an understanding of the entire operational picture to include potential strategic implications. Much of this lack of joint understanding results from the absence of an OCS task on the Uniform Joint Task List (UJTL). OCS does not appear on the Strategic, Operational, or Tactical UJTLs today. A variation is found on the Strategic National (SN) list named: "SN 3.5.2.8., Provide Space Negation", but this

³⁴ AFDD 2-2.1, *Counterspace Operations*, 35.

does not help at the operational level.³⁵ An OCS task should be added as a stand-alone initially, then could be incorporated under another task (such as Offensive Counter Air) later on once the joint community has some experience with it. Similar UJTL tasks were added for IO until each Service understood their roles during IO operations.

Second, the best command and control structure has yet to be discovered, however when OCS operations are imminent, the JFACC should command all OCS forces. He has the know-how of operational space warfare, by virtue of his background and use of his DIRSPACEFOR; is typically designated SCA; already controls much of the aviation assets; and therefore is the logical lead component commander for OCS operations for the JFC. A single commander in-theater is essential to assess the situation, coordinate planning efforts, make recommendations to the JFC, and command all OCS forces. With TACON at the JFACC, the tactical effects can be better synchronized with the theater's battle rhythm and targeting, timing, and tempo can be suited to optimize the use of all forces for the given task.³⁶

Finally, the JFC and theater planners need to have strategic oversight when directing and planning OCS operations. This can only be accomplished if there is close coordination with USSTRATCOM during the planning process and throughout operations. USSTRATCOM is the sole DOD organization that has global space awareness. Their inclusion in the planning cell (either virtual or in-person) is critical to effective planning, especially considering the global effects that an operation can have against a theater space asset.

³⁵ Chairman, U.S. Joint Chiefs of Staff, Universal Joint Task List, (Washington, DC: CJCS, 1 August 2005), D-7.

³⁶ Lt Col Daniel Dant (Commander, 4th Space Control Squadron), interview by the author, 9 April 2007.

Recommendations

In order to bridge these gaps in doctrine and knowledge, the following items are recommended.

1. The JFC organize his forces so that JFACC be given command and control over all OCS forces within a theater.
2. Update Joint Publication 3-14 to include the current organization of space forces across the Department of Defense.
3. Establish and coordinate Joint Publication 3-14.1 that outlines U.S. joint offensive and defensive counter space operations including joint force employment, possible command structures and organization options, and global considerations.
4. Create an Operational UJTL task titled, “OPS 3.2.8: Gain and Maintain Space Superiority (Offensive Counter Space).”

Selected Bibliography

- Air Force Association, "Space Almanac," *Air Force Magazine*. 89 (August 2004).
- Benrose, Stephanie. "Warfare flight works behind the scenes." *Air Force Print News*, 25 April 2006. <http://www.af.mil/news/> (accessed 25 April 2007).
- Lupton, David E., *On Space Warfare: A Power Doctrine*. Maxwell AFB, AL: Air University Press, 1988.
- Tirpak, John A. "Securing the Space Arena." *Air Force Magazine* 87, no. 7 (July 2004): 30-34.
- U.S. Air Force. Space Operations. Air Force Doctrine Document (AFDD) 2-2. Washington, DC: Department of the Air Force, 27 November 2006.
- U.S. Air Force. Counter Space Operations. Air Force Doctrine Document (AFDD) 2-2.1. Washington, DC: Department of the Air Force, 2 August 2004.
- U.S. Office of the Chairman of the Joint Chiefs of Staff. Unified Action Armed Forces (UNAAF). Joint Publication (JP) 0-2. Washington, DC: CJCS, 10 July 2001.
- U.S. Office of the Chairman of the Joint Chiefs of Staff. Department of Defense Dictionary of Military and Associated Terms. Joint Publication (JP) 1-02. Washington, DC: CJCS, 12 April 2001; amended 1 March 2007.
- U.S. Office of the Chairman of the Joint Chiefs of Staff. Joint Doctrine for Space Operations. Joint Publication (JP) 3-14. Washington, DC: CJCS, 9 August 2002.
- U.S. Office of the Chairman of the Joint Chiefs of Staff. Joint Operations Planning. Joint Publication (JP) 5-0. Washington, DC: CJCS, 26 December 2006.
- U.S. Office of the Chairman of the Joint Chiefs of Staff. Universal Joint Task List. Washington, DC: CJCS, 1 August 2005.
- Wolf, Jim. "China poses risk to key U.S. satellites: top general." *USAF Aim Points*, April 12, 2007. <http://aimpoints.hq.af.mil> (accessed April 12, 2007).